

Statement of  
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Administrator

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

before the

Subcommittee on Advanced Research and Technology  
Committee on Science and Astronautics  
House of Representatives

Mr. Chairman and Members of the Subcommittee:

NASA appreciates very much the opportunity to appear here today to participate in these important hearings on aeronautical research and development. It is a distinct privilege for me to appear for the first time before this Subcommittee, which in my view has contributed significantly in developing and leading support for the Nation's and NASA's aeronautics programs.

The hearings by the Subcommittee held in the fall of 1968, and those in December of 1969 served to focus Congressional and public attention on the importance of a farsighted and systematic approach to planning this Nation's total aeronautical research and development efforts. The subsequent report of this Subcommittee in March of 1970 pinpointed areas where additional study was needed and thus proved to be extremely useful in guiding the efforts of the

Joint DOT-NASA study on Civil Aviation Research and Development -- the so-called CARD study -- which was completed last spring. Accompanying me today are Mr. Roy P. Jackson, the Associate Administrator in charge of the Office of Aeronautics and Space Technology, and senior members of his staff, who will discuss that study and the steps which have been taken or formulated as a result of its recommendations.

Before I turn to a summary discussion of the recommendations of the CARD study and the status of NASA actions in implementing those recommendations, I would like to express my support for the steady increase in funding within NASA for aeronautics over the last several years. Funding for aeronautics in the research and development appropriation has grown from \$42 million in FY 1966 to \$110 million in FY 1972, a doubling in terms of constant dollars. When you add the funding for salaries and other in-house costs related to supporting the aeronautics programs, the total aeronautics funding has grown from 1.6% of the total NASA budget in FY 1966 to 7.1% in FY 1972. The number of NASA personnel whose efforts are being applied to aeronautics research and technology has grown from 2,600 in 1966 to 5,300 this year. The

increase to this level has occurred during a period of major staff reductions in NASA of over 6,000 during the last six years from 34,000 to 27,500 total positions.

I support this aeronautics growth trend and intend to see that it continues.

Next week, President Nixon will submit his Budget for FY 1973 to the Congress. In the subsequent hearings before the Committee on Science and Astronautics on the FY 1973 request for NASA, we will review with you in detail our specific proposals for FY 1973 in aeronautics and relate those to our discussions in these hearings.

With this as an introduction, Mr. Chairman, let me discuss the CARD study.

Quite appropriately, emphasis was placed in the CARD study on the public benefits from civil aviation and the contribution of R&D to the achievement of these benefits, in turn, to serve as a basis for determining the proper Government role in R&D and the appropriate funding level. The rapidly growing demand for transportation by a much larger and more mobile society, and the increasing threat of foreign competition in producing equipment to satisfy this demand, must be met, but in the context of stringent fiscal constraints.

In addition to providing a good accounting of the benefits from civil aviation -- and I believe they are

quite impressive -- the CARD study presents a policy framework, with specific action proposals, for aeronautical R&D. These proposals take into account the economic, social, legal and institutional factors which have become increasingly important in planning research and development.

A very direct result of the CARD study -- which in my view will keep it from becoming just another interesting library reference -- is that it forced the establishment of new and more effective coordination mechanisms between NASA and DOT. And these in turn are being used to develop a formal CARD Policy Implementation Plan to specify clear goals, responsibilities, planned achievement milestones, and projected resource requirements for DOT and NASA jointly in the years ahead.

The CARD Policy Study results have already impacted our programs over the past year. It has caused a better focus on the priority problem areas of aircraft noise and terminal congestion that are impeding the growth of the entire aviation system. It has caused more specific attention to the role R&D might play in developing a better total operating system for the low density aviation market so that civil aviation might be used more economically as a tool for regional development. The focus on these priority areas is being accomplished without compromising our ability to continue a comprehensive research and technology

program in all the aeronautical disciplines to provide a technology base for the future.

The CARD study results have caused us to address more specifically the relationship of program costs to potential public benefit at the project level. Taken together with the inability of the private sector to undertake the activity without Government support, this forms the basis for the funding of research and technology by NASA. The application of these criteria clearly indicates the need for increased emphasis on high public benefit activities, such as noise abatement and congestion relief, where there is no clear market opportunity for the industry, but where the solution will open the way to growth and greater public acceptance of civil aviation.

It is also clear that there should be greater emphasis on carrying technology efforts beyond the ground laboratory or the wind tunnel stages into experimental hardware, some for actual flight experimentation. Experimental hardware is costly, but it is necessary in some cases to reduce technological risk to a point of reasonable private investment in development, and to accelerate the achievement of a capability beneficial to the general public. The Quiet Engine Program and the STOL experimental aircraft are significant examples of this type of activity.

I would like now to discuss briefly our joint R&D activities with the Department of Defense since it impacts in several ways on civil aeronautics research as well. As you know, a major part of the NASA aeronautical research and technology program has supported military aircraft programs for many years -- actually back to the inception in 1915 of NASA's predecessor agency, the National Advisory Committee for Aeronautics.

Included in the CARD study was an examination of the relationship between military and civil R&D to identify any new trends. The largest share of the Federal support for aeronautical R&D, three fourths in the last few years, has been provided by DOD. Since military aeronautical R&D programs have always substantially benefitted civil aviation, they have been a major factor in the past growth of civil aviation, particularly with regard to aircraft engines.

In recent years, however, there has been concern that military and civil aircraft requirements were diverging so that civil aviation would not benefit as much in the future. The CARD study revealed no such trend even though military aircraft production has decreased in recent years. It also appeared from the study that there would be no major reduction in the benefit military R&D will provide to civil aviation. For example, an area identified as having a high priority for civil needs, i.e., short haul technology

(probably STOL), is also now receiving active attention by the Air Force. And we are working closely with the Air Force in this area to derive the maximum cross-benefit between the Air Force Medium STOL Transport Program and the NASA Experimental STOL Vehicle Program.

Mr. Chairman, during these hearings, we will be describing the major program efforts related to the CARD Study priorities with relatively near term-payoff. I would not want to leave the impression from this emphasis that we are stressing near-term benefits in any way to the detriment of the far-term future capabilities. This is not the case.

The results of research and technology are frequently unpredictable and long term. Resource judgements for research must be relatively gross estimates of the funding required to employ a minimum "critical mass" of talent in all disciplines with emphasis on those where serious problems exist or large payoff appears possible. With the long lead times required for a technology base, we feel a heavy responsibility to insure a comprehensive capability for future development options in all areas, and the NASA program balances are designed to serve this end.

In concluding, let me express my firm conviction that the CARD Study has given us a sound basis to apply increased

aeronautical resources in closer cooperation with the DOT to more broadly planned programs better focused on needs. This steadily improving relationship with DOT is, I believe, beneficial to both organizations; but, I recognize also that there is much to be done to make that relationship even more effective. In this regard, we support the increasing efforts of the National Aeronautics and Space Council, now that DOT is a member, in the joint development of policies and programs.

I endorse the conclusions of the CARD study and support the efforts underway to implement its recommendations.

Mr. Chairman, this concludes my prepared statement.